

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of February 28, 2007 is respectfully requested.

The specification and abstract have now been reviewed and revised as indicated above so as to make various editorial corrections. Because all of the changes are formal in nature, it is submitted that no new matter has been added. Therefore, the Examiner is respectfully requested to enter the amendments to the specification.

In the outstanding Office Action, the Examiner rejected claims 1-8, 15-19, 21, and 22 as being anticipated by the Basol reference (USP 6,943,112); rejected claims 9 and 10 as being unpatentable over the Basol reference in view of the Nagai reference (US publication 2002/0027081); rejected claims 11, 12, and 20 as being unpatentable over the Basol reference in view of the Mikkola reference (US publication 2002/0074231); rejected claim 13 as being unpatentable over the Basol reference in view of Mikkola reference and further in view of the Dubin reference (US publication 2002/0036145); rejected claim 14 as being unpatentable over the Basol reference in view of the Taylor reference (USP 6,309,528); rejected claims 23-25 as being unpatentable over the Basol reference in view of the Hongo reference (USP 7,033,463); and rejected claim 26 as being unpatentable over the Basol reference in view of the Kunisawa reference (US publication 2002/0020627). However, independent claim 1 has now been amended as indicated above, original dependent claims 10-26 have been cancelled, and new dependent claim 27 has been added. For the reasons discussed below, it is respectfully submitted that amended independent claim 1 and the claims that depend therefrom are clearly patentable over the prior art of record.

As explained on page 1, lines 5-12 of the original specification, the present invention is directed to a plating method for forming a film with high adhesion and with few or no voids on a substrate, even when both narrow recesses and relatively broad recesses are present in the surface of the substrate. In order to achieve these advantages, amended independent claim 1 recites performing a first plating under plating conditions for filling a metal in the narrow recess to form a plated film, and applying a reverse electric field in a manner so as to *etch* the plated film filled

in the narrow recess by the first plating. Then, a second plating is performed under plating conditions for filling a metal in the broad recess.

As explained on page 9, lines 1-6 with respect to Figure 2A of the present application, the reverse electric field is applied after the first plating so as to etch away any overplated film on the surface of the narrow recesses. Thus, any additive that might be specific to the particular plating conditions for the first plating can be removed (etched away) with the overplated film so as to prevent that additive from interfering with the second plating, while also quickly and efficiently preparing the surface of the plated film filled in the narrow recess for the second plating (see also page 21, line 24 through page 23, line 3 of the original specification).

On page 9 of the outstanding Office Action, the Examiner acknowledged that the Basol reference does not teach a method including applying a reverse electric field after first plating is performed. However, the Examiner asserted that the Taylor reference teaches applying a reverse electric field “in order to completely fill the recesses or provide a conformal coating” (see lines 1-2 on page 10 of the Office Action). In particular, the Taylor reference teaches “imposing a modulate reversing electric field to *deposit* the metal, e.g., copper, on the surfaces of the board” (see column 10, lines 11-12; emphasis added). Furthermore, the Taylor reference teaches that the “pulsed reversing current having the wave form used in the first step of the process will typically *deposit* a relatively thin layer of conductive metal over the surface 302 of the board 300 ” (see column 10, lines 28-31; emphasis added). Thus, the Taylor reference teaches applying a reversing current during a plating process so as to *deposit* material on the substrate surface. However, the Taylor reference does not disclose or even suggest applying a reverse electric field in a manner so as to *etch* the plated film filled in the narrow recess by a first plating. In other words, the manner in which the reversing current is applied in the Taylor reference (to *deposit* material) is quite contrary to the manner in which the reverse electric field is applied in the method as recited in amended independent claim 1 (to *etch* a film). Therefore, it is submitted that the Taylor reference provides no apparent reason for one of ordinary skill in the art to modify the Basol reference so as to obtain the invention recited in amended independent claim 1.

In addition to the Basol reference and the Taylor reference, it is submitted that the Nagai reference, the Mikkola reference, the Dubin reference, the Hongo reference, and the Kunisawa reference also do not disclose or suggest a plating method as recited in amendment independent claim 1, including applying a reverse electric field in a manner so as to etch a plated film in combination with the first plating and the second plating as recited therein. Therefore, none of these references would provide a reason for one of ordinary skill in the art to modify the Basol reference to obtain the invention recited in amended independent claim 1. Accordingly, it is respectfully submitted that amended independent claim 1 and the claims that depend therefrom are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

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